Record of Decision

FDEP FACID #168521650 Sites:

Storage Tank Site 16 (TU013) November 6, 1995 (Non-Program)
Storage Tank Site 23 (TU018) & 24 (TU017) October 6, 1995 (Non-Program)

Final

Florida Air National Guard
Jacksonville International Airport
Jacksonville, Florida

Prepared By

Air National Guard Headquarters
Joint Base Andrews, Maryland

May 2022

This page intentionally left blank

Table of Contents

Tables

Attachments

Attachment 1 – Figures.

Acronyms

AMSL	above mean sea level
ANG	Air National Guard
ARAR	Applicable or Relevant and Appropriate Requirement
A4VR	Environmental Division Restoration Branch
B(a)P	Benzo(a)pyrene
BGS	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	contaminants of concern
DoD	Department of Defense
EC	engineering control
EDB	1,2-dibromoethane
EQ	equivalent
EQD	Environmental Quality Division
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FFS	Focused Feasibility Study
FLANG	Florida Air National Guard
FLANGB	Florida Air National Guard Base
FW	fighter wing
GCTL	groundwater cleanup target level
HHRA	human health risk assessment
IAP	International Airport
IC	institutional control
ID	identification
IRP	Installation Restoration Program
LUC	land use control
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
NAM	natural attenuation monitoring
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NFA	no further action
NGB	National Guard Bureau
O&M	operations and maintenance
OSHA	Operational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PP	Proposed Plan
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RSL	residential screening level

Acronyms (continued)

SAR	Site Assessment Report
SCTL	soil cleanup target level
SARA	Superfund Amendments and Reauthorization Act
SPLP	synthetic precipitation leaching procedure
SVOC	semi-volatile organic compounds
TBC	to be considered
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
µg/L	micrograms per liter
USAF	United States Air Force
UST	underground storage tank
UU/ UE	unlimited use/unrestricted exposure
VOC	volatile organic compounds

This page intentionally left blank

1 Declaration

1.1 Site Names and Location

Facility Name: Florida Air National Guard Base (FLANGB)

Site Location: Jacksonville, Florida

Florida Department of Environmental Protection (FDEP) Florida Administrative Code (FAC) Identification (ID) Number: 168521650

Storage Tank Site 16 (TU013) November 6, 1995 (Non-Program)

Storage Tank Site 23 (TU018) & 24 (TU017) October 6, 1995 (Non-Program)

1.2 Statement of Basis and Purpose

This decision document presents the selected remedy for the preferred alternative for cleanup of contaminants at underground storage tank (UST) Site 16 (TU013) and co-located UST Site 23 (TU018) and UST Site 24 (TU017) at the FLANGB. Sites 16, 23, and 24 are referred to as UST-16, UST-23, and UST-24, respectively, throughout the remainder of this document. The FLANGB is located adjacent to the Jacksonville International Airport (IAP). The FLANGB and the locations of UST-16, UST-23, and UST-24 at the FLANGB are shown on **Figure 1-1 and Figure 1-2.** All of the figures referenced in this document are provided in Attachment 1.

This document is issued by the Air National Guard (ANG) as the lead agency. The ANG is managing remediation of contamination at UST-16 and co-located UST-23 and UST-24 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as required by the Department of Defense (DoD) Installation Restoration Program (IRP) at the FLANGB.

ANG has been assigned by the United States Air Force (USAF) as the lead agency responsible for the implementation of the IRP program at the FLANGB in Jacksonville, with regulatory oversight by the FDEP and City of Jacksonville Environmental Quality Division (EQD). The EQD is currently contracted to lead the regulation of contaminated site cleanup at these sites under Chapter 62-780 of the FAC by the FDEP. As the lead agency, the ANG has selected the remedy at UST-16 and co-located UST-23 and UST-24 with regulatory and public input. The remedy at each site is detailed in a Proposed Plan (PP) (ANG, 2020) that was approved by the EQD on August 30, 2019 (EQD, 2019).

The overall objective of the project is to achieve a result protective of human health and the environment that that will support a Site Rehabilitation Completion Order (SRCO) at UST-16 and co-located UST-23 and UST-24 with no institutional controls (ICs) or risk reclassification per FAC.

1.3 Assessment of Sites

1.3.1 Site Assessment of UST-16

Site assessment activities conducted in 2011 included the collection of five soil samples and one groundwater sample (ANG, 2012). Soil samples were analyzed for volatile organic contaminants (VOCs), semi-volatile organic contaminants (SVOCs), total recoverable petroleum hydrocarbons (TRPH), polychlorinated biphenyls (PCBs), and select metals (i.e., arsenic, lead, cadmium, and

chromium). The groundwater sample was analyzed for VOCs, SVOCs, 1,2-dibromoethane (EDB), total petroleum hydrocarbons (TPH), PCBs, and select metals (i.e., arsenic, lead, cadmium, and chromium). The site assessment concluded that one soil sample exceeded the Environmental Protection Agency (EPA) soil screening level for leachability of lead to groundwater. The polycyclic aromatic hydrocarbon (PAH) benzo(a)pyrene (B(a)P) and calculated B(a)P equivalent (EQ) in one soil sample exceeded the Florida direct-exposure soil cleanup target level (SCTL). No constituents were detected in groundwater above Florida groundwater cleanup target levels (GCTLs). Based on the site assessment findings, additional soil and groundwater sampling was conducted in a Remedial Investigation (RI) in 2014 and a Supplemental RI in 2015 to delineate the horizontal and vertical extents of lead and PAHs in soil and to further assess lead in groundwater. A site-specific lead SCTL of 49.8 milligrams per kilograms (mg/kg) for soil leachability to groundwater was developed in accordance with FDEP guidance at that time (ANG, 2016).

The RI results concluded that lead and the PAHs B(a)P and benzo[a]anthracene were the only analytes detected in soil above the SCTLs for leachability to groundwater. No chemicals were detected in groundwater in a temporary monitoring well (T16-TW1) above GCTLs; however, because of the elevated lead results detected in soil, it was recommended that permanent monitoring wells be installed and sampled for lead. Two shallow (T16-MW2 and T16-MW3) and two deep (T16-MW1 and T16-MW4) monitoring wells were installed and sampled to further assess lead in groundwater. Lead was not detected in any of the groundwater samples collected from the wells at UST-16.

In summary, analysis of the sample data concluded that PAHs, specifically B(a)P and B(a)P EQ, were Human Health Contaminants of Concern (COCs) in soil. No other human health COCs were identified in soil or groundwater. Lead, B(a)P, and benzo[a]anthracene in soil were identified above the SCTLs for leachability to groundwater. The locations of PAH exceedances in soil are shown on **Figure 1-3**. The locations of lead exceedances in soil are shown on **Figure 1-4**.

A Focused Feasibility Study (FFS) for UST-16 was finalized in April 2017 (ANG, 2017). The purpose of the FFS was to evaluate the COCs and cleanup goals and to evaluate remedial alternatives. Based on a comparative analysis of alternatives, excavation with offsite disposal to attain residential SCTLs (Alternative 4) was recommended in the FFS for UST-16.

1.3.2 Site Assessment of UST-23 and UST-24

UST Removal activities in 1995 included a limited source (soil) removal along with the USTs. During the 2011 site investigation, soil samples were collected at depths ranging from 2 to 6 feet below ground surface (BGS) and analyzed for benzene, toluene, ethylbenzene, xylene, TPH, and PAHs. As shown on **Figure 1-5**, none of the detected constituents exceeded SCTLs for unrestricted direct exposure or leachability to groundwater (ANG, 2012).

During the 2011 site investigation, benzene and TPH were detected in groundwater above the GCTLs. In subsequent RI activities, groundwater samples from vertical profile borings also exhibited benzene and TPH detections above GCTLs. However, groundwater samples collected from the permanent monitoring wells in 2014 and 2015 exhibited only benzene exceedances above GCTLs in one shallow well (T23/24-MW5) and isopropylbenzene exceedances above the GCTL in one deep well (T23/24-MW3) and one shallow well (T23/24-MW5) (ANG, 2016). The monitoring wells and locations of exceedances of the GCTLS are identified on **Figure 1-6**.

A FFS for UST-23 and UST-24 was finalized in April 2017 (ANG, 2017). The purpose of the FFS was to evaluate the COCs and cleanup goals and to evaluate remedial alternatives. Based on a comparative analysis of alternatives, groundwater sampling for natural attenuation monitoring (NAM) of benzene and isopropyl benzene with ICs (Alternative 3) was recommended at UST-23 and UST-24 in the FFS.

Subsequent to the FFS, further ANG analysis of Alternative 3 and Alternative 4 (NAM, in-situ bioremediation, and ICs) found that Alternative 4 provided a more conservative approach to attain the RAOs at UST-23 and UST-24 with a minimal capital cost increase. Alternative 4 is the same as Alternative 3, except for the addition of in-situ groundwater bioremediation. The in-situ bioremediation provided in Alternative 4 offers more certainty in attaining the RAOs in a shorter remedial timeframe. Therefore, NAM, in-situ groundwater bioremediation, and ICs (Alternative 4) were selected as the more conservative remedy at UST-23 and UST-24.

1.4 Description of Selected Remedy

1.4.1 UST-16

Remedial alternatives for UST-16 were developed and evaluated through an FFS (ANG, 2017). Based on a comparative analysis of remedial alternatives, the excavation with offsite disposal to attain residential soil SCTLs, Alternative 4, was recommended for UST-16. Alternative 4 meets the remedial action objectives (RAOs) for UST-16 and provides the best balance of cost and overall protection, while providing an effective, long-term solution. Under this proposed alternative, all contaminated soil with COC concentrations (i.e., PAH concentrations) exceeding residential SCTLs will be excavated and disposed offsite. The excavation will be backfilled with clean native fill material and seeded with grass cover to restore the excavated area to the surrounding site conditions. There will be no operations and maintenance (O&M) activities or five-year CERCLA reviews necessary under this alternative because the remedial action will attain SCTLs protective of residential land use conditions.

Following approval of the ANG 2017 FFS and recommended alternative, a project review meeting was conducted with ANG, FLANG, and the City of Jacksonville EQD regulator in November 2017. During this meeting, it was recommended by the project team that, prior to implementation of remedial Alternative 4, an option be considered to analyze lines of evidence that PAHs detected in soil at UST-16 are related to background sources and not UST-16. In addition, it was recommended that lead leachability in soil at UST-16 be analyzed by synthetic precipitation leaching procedure (SPLP) to confirm whether lead is at concentrations capable of leaching from the soil to groundwater and that a confirmation groundwater sample be sampled from the 4 existing monitoring wells to demonstrate lead continues to be below GCTLs. The project team agreed that successful demonstration of PAHs related to background, SPLP soil lead results less than the lead leachability criteria (49.8 mg/kg), and groundwater lead concentrations less than the GCTL could be an acceptable method of achieving no further action (NFA) for UST-16 as an option to Alternative 4. The PAH background analysis, soil lead SPLP analysis, and groundwater analysis and remedial Alternative 4 are detailed in the EQD approved PP (ANG, 2020).

The optional analysis to demonstrate NFA criteria (background analysis, SPLP soil lead analysis, and sampling four existing monitoring wells) and Alternative 4 (excavation with offsite disposal to attain residential SCTLs) are briefly summarized in the following sections.

UST-16 Background Analysis – UST-16 PAH Analysis of Background and Site Soil. An analysis of the PAH concentrations and distribution in soil at UST-16 and background should be conducted

utilizing the methods in the FDEP technical document entitled Guidance for Comparing Background and Site Chemical Concentrations in Soil (FDEP, 2012). Lines of evidence that the PAHs, B(a)P, and B(a)P EQs, which exceed SCTLs, are associated with background sources will be reviewed.

UST-16 SPLP Soil Analysis – Several groundwater analytical results to date have not detected lead in groundwater above GCTLs; therefore, soil with lead detected above the leaching to groundwater criteria does not appear to be leaching to groundwater. To demonstrate this result, a soil sample should be taken in the soil adjacent to previous soil sample T16-HA13, which exceeded lead leachability criteria, and analyzed for lead by SPLP utilizing EPA Method 1312.

UST-16 Groundwater Analysis – A groundwater sample should be collected from the 4 existing wells at UST-16. The samples should be analyzed for lead only, as there are no COCs in groundwater, and lead was previously detected in soil above the leachability criteria.

The analysis will be provided in a report to be submitted to EQD and titled Post Active Remedial Monitoring Report – Site Rehabilitation Recommendation Request. Should these analyses be unsuccessful in demonstrating NFA criteria, the 2017 FFS remedial alternative, excavation with offsite disposal to attain residential SCTLs, will be implemented at UST-16.

Demonstration and regulatory approval that PAHs in soil are associated with background concentrations and not site derived, SPLP soil results are less than the lead leachability criteria, and groundwater results are below lead GCTLs, would result in NFA and an SRCO at UST-16. Because the SRCO would attain unlimited use and unrestricted exposure (UU/UE) status, CERCLA five-year reviews would not be required following the SRCO approval.

Alternative 4 - UST-16 Excavation with Offsite Disposal to Attain Residential SCTLs – This alternative will be implemented, if warranted, based on the results of the optional background, SPLP, and groundwater analysis described above. Under Alternative 4, soil excavation will be conducted from 0 to 1 feet BGS for an area of approximately 970 square feet that exceeds the direct-contact residential SCTLs for PAHs. The entire area exceeding the soil lead and PAH leachability SCTL is also encompassed within this soil excavation. A deeper zone (0 to 4 feet BGS) will also be excavated for an area approximately 25 square feet at soil sample location T16-HA1, where the PAH (benzo(a)anthracene) concentration exceeded the direct-contact SCTL. The proposed area to be excavated is shown on **Figure 1-7**. EQD has recommended that confirmatory soil sampling for PAHs and lead by laboratory analyses be conducted along the sidewalls and the bottom of excavations in accordance with FDEP regulations. The confirmatory soil samples should be collected from the sidewall and bottom of the excavation in twenty-foot intervals. During excavation activities, the existing monitoring wells at the site should be protected, and soil should be excavated around the wells in a manner that does not damage the wells. One representative groundwater sampling event is required at source removal sites, such as UST-16, that did not historically yield groundwater contamination, in accordance with FDEP Petroleum Restoration Program Closure Guidelines dated January 27, 2014 (EQD, 2017).

The excavated soil (approximately 40 cubic yards) will be appropriately characterized and disposed at an offsite facility. Based on historical soil concentrations at UST-16, it is anticipated that the excavated soil will be classified as non-hazardous waste. The excavation will be backfilled with clean native soil material obtained either from an on-base location or locally sourced from an offsite location. The backfilled area will be brought to grade and seeded with grass cover to match the surrounding cover at UST-16. Following site restoration, a Corrective Action Completion Report will be submitted to EQD for review and approval. It is anticipated that a SRCO would be

issued by EQD. Because this alternative would attain UU/UE status, CERCLA five-year reviews would not be required.

1.4.2 UST-23 and UST-24

Remedial alternatives for UST-23 and UST-24 were developed and evaluated in the 2017 FFS (ANG, 2017). Based on a comparative analysis of remedial alternatives, Alternative 3 was recommended for implementation at UST-23 and UST-24. Subsequent to the FFS and the PP, further ANG analysis of Alternative 3 and Alternative 4 (NAM, in-situ bioremediation, and ICs) found that Alternative 4 provided a more conservative approach to attain the RAOs at UST-23 and UST-24 with a minimal capital cost increase. Alternative 4 is the same as Alternative 3, except for the addition of in-situ bioremediation. The groundwater in-situ bioremediation provided in Alternative 4 offers more certainty in attaining the RAOs in a shorter remedial timeframe. Therefore, NAM, in-situ bioremediation, and ICs (Alternative 4) were selected as a more conservative remedy at UST-23 and UST-24. Alternative 4 meets the RAOs for UST-23 and UST-24 and provides the best balance of cost and overall protection while providing an effective, long-term solution. Alternative 4 consists of groundwater in-situ bioremediation applications, groundwater sampling for NAM of benzene and isopropyl benzene at the six existing monitoring wells at UST-23 and UST-24, and ICs until benzene and isopropyl benzene are below GCTLs.

The groundwater sampling will be performed on a quarterly basis for the first year, semi-annually for the second year, and annually thereafter, as required. The RAOs are to reduce benzene and isopropyl benzene concentrations below the GCTLs of 1 and 0.8 micrograms per liter (µg/L), respectively. The ICs would be implemented to restrict groundwater use until benzene and isopropyl benzene concentrations in groundwater are attained below the GCTLs. The ICs would limit use of the site to industrial/commercial purposes and prohibit the installation of water wells for any use, including use as a water supply. Given that the benzene and isopropyl benzene concentrations are currently only slightly above the GCTLs, it is anticipated that contaminant concentrations would attenuate below GCTLs in a relatively short time through groundwater in-situ bioremediation and NAM. Two consecutive groundwater sampling events with benzene and isopropyl benzene results below GCTLs will be required to ensure compliance in accordance with FDEP guidelines.

Following demonstration of site restoration, a Corrective Action Completion Report will be submitted to EQD for review and approval. It is anticipated that an SRCO would be issued by EQD at that time.

1.5 Statutory Determinations

The selected remedy for UST-16 and UST-23 and UST-24 is protective of human health and the environment, complies with promulgated requirements that are applicable or relevant and appropriate (ARARs) to the remedial action, and is cost effective.

The selected remedy at each site represents the maximum extent to which permanent solutions can be used in a practicable manner at the site. It provides the best balance or trade-offs in terms of balancing criteria while also considering the bias against offsite treatment and disposal and considering regulatory and community acceptance. The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site whenever practicable (40 Code of Federal Regulations [CFR] 300.430[a] [1] [iii] [A]).

At UST-16, Alternative 4, soil excavation and off-site disposal to residential criteria, would satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the

toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). Because the remedy UST-16 will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE, a five-year review would not be required for UST-16. As discussed in Section 4.1.1, Alternative 4 will be implemented based on the results of an optional background, SPLP, and groundwater analysis to confirm the remedial alternative is warranted at this site.

At UST-23 and UST 24, it is anticipated that groundwater in-situ bioremediation and NAM will result in benzene and isopropyl benzene concentrations to attenuate below GCTLs in a relatively short period of time. ICs will be implemented to restrict groundwater use until benzene and isopropyl benzene concentrations in groundwater are recorded below the GCTLs. The ICs would prevent unacceptable exposure to receptors by limiting the use of the site to industrial/commercial purposes and prohibit the installation of water wells for any use, including use as a water supply.

1.6 Data Certification Checklist

The following information is included in the Decision Summary section of this Record of Decision (ROD) (**Section 2**). Technical documents with additional information can also be found in the Administrative Record for UST-16, UST-23, and UST-24, available online at https://ar.afcec-cloud.af.mil/, and also available for review at the Highlands Branch Public Library located at 1826 Dunn Avenue, Jacksonville, FL. Historical documents in the Administrative Record can be requested by contacting the ANG Program Manager, Mr. Mark Dickerson, at mark.dickerson@us.af.mil.

- List of COCs and their respective concentrations.
- Cleanup levels established for COCs and the basis for these levels.
- Potential land and ground water use that will be available at the site as a result of the selected remedy.
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected.
- Key factor(s) that led to selecting the remedy (i.e., describe how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision).

1.7 Authorizing Signatures

This signature sheet documents the ANG approval, and concurrence of Florida ANG (FLANG) and the City of Jacksonville EQD.

_____ _____

Elaine Magdinec, PE, GS-15 Date
Chief, Environmental Division
NGB/A4V

_____ _____

Stephanie M. Moronta, E.I. Date
Environmental Associate Engineer
City of Jacksonville / Neighborhoods Department
214 N. Hogan Street, 5th floor, Jacksonville, FL 32202

2 Decision Summary

The decision summary identifies the selected remedy, explains how the remedy fulfills statutory and regulatory requirements, and provides a substantive summary of the Administrative Record file that supports the remedy selection decision.

2.1 Site Name, Location, and Description

The FLANGB is located in the northeast coastal region of Florida, approximately ten miles north of the City of Jacksonville, Duval County, and is adjacent to the Jacksonville IAP. The location of FLANGB is shown on **Figure 1-1**. The FLANGB includes approximately 30 buildings and occupies approximately 332 acres of land. The base is fenced, with only one access point at the main gate, which is guarded by base security forces.

The FLANGB supports the 125th Fighter Wing (FW). The mission of the 125th FW is to maintain a combat-ready response team and to intercept unidentified aircraft approaching US airspace from the east and southeast. Currently, the 125th FW maintains F-15 Eagle fighters on continuous 24-hour alert status. UST-16, UST-23, and UST-24 are located in the central portion of the FLANGB property. UST-16 consisted of a former oil and water separator that was removed on November 6, 1995. UST-23 and UST-24 consisted of two former unleaded gasoline USTs that were co-located and removed at the same time on October 4, 1995. The locations of UST-16, UST-23, and UST-24 are illustrated on **Figure 1-2.**

2.2 Site History and Characterization Activities

This section provides background information and summarizes the series of previous site activities and investigations at UST-16, UST-23, and UST-24 that led to the ROD. This section also describes the CERCLA response actions undertaken at UST-16, UST-23, and UST-24.

2.2.1 UST-16

- Site Assessment: During the 2011 site investigation, five soil samples were analyzed for VOCs, SVOCs, TPH, PCBs, and select metals (i.e., arsenic, lead, cadmium, and chromium), and one groundwater sample was analyzed for VOCs, SVOCs, EDB, TPH, PCBs, and select metals (i.e., arsenic, lead, cadmium, and chromium). One soil sample exceeded the EPA soil screening level for leachability. No constituents were detected in groundwater above the GCTLs. Based on the findings in the Site Assessment Report (SAR), additional soil and groundwater samples were recommended to evaluate the horizontal and vertical extents of lead (ANG, 2012). Based on the EQD review of the SAR, it was determined that the calculated B(a)P equivalent in one sample from location T16-HA1 (3 to 4 feet BGS) also exceeded the direct-exposure SCTL, and that a site-specific lead SCTL for groundwater leachability had not been determined for screening (ANG, 2012).
- RI field activities were conducted from September to December 2014 to delineate the PAH contamination in soil and the lead contamination in soil and groundwater and to calculate a site-specific lead SCTL for groundwater leachability.
- Supplemental RI field activities (PAH and lead soil sampling) were conducted in October and December 2015 to complete the objectives for the RI. At UST-16, seven soil borings were used

to delineate the horizontal and vertical extents of lead contamination in soil above SCTLs. In addition, five soil borings were used to delineate the horizontal and vertical extents of PAH contamination in soil at UST-16 based on SCTLs. The horizontal and vertical extents of lead in groundwater at UST-16 were delineated based on GCTLs with two shallow monitoring wells and two deep monitoring wells.

- Remedial alternatives for UST-16 were developed and evaluated through the FFS (ANG, 2017). Based on a comparative analysis of remedial alternatives, Alternative 4, excavation with offsite disposal to attain residential soil SCTLs was recommended for UST-16. This remedial excavation alternative will be implemented, if required, subsequent to a background analysis of PAH concentrations and site soil, SPLP soil lead analysis, and one round of groundwater analysis for lead at the four existing monitoring wells at UST-16. The successful demonstration of PAHs at background concentrations, SPLP soil lead results less than the lead leachability criteria (49.8 mg/kg), and groundwater lead concentrations less than the GCTL, would be an acceptable method of achieving NFA for UST-16 as an option prior to implementation of Alternative 4.

2.2.2 UST-23 and UST-24

- 2011 Site Assessment: During this investigation, ten soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes; methyl tertiary butyl ether; PAHs; and TPH, and two groundwater samples were analyzed for VOCs, PAHs, EDB, TPH, and lead. In soil, none of the detected constituents exceeded SCTLs for residential direct exposure or groundwater leachability; however, benzene and TPH were detected in groundwater above the GCTLs. Based on the findings in the SAR, installation of additional monitoring wells was recommended to evaluate the horizontal and vertical extents of the benzene and TPH groundwater plume. Jacksonville EQD approved the recommendation per the letter dated November 30, 2012 (EQD 2012).
- 2014 RI: The initial RI field activities were conducted from September to December 2014. During the RI, four vertical profile borings were installed to help define the extent of benzene and TPH contamination in groundwater and to determine where permanent monitoring wells should be installed at this site. Based on the results of the vertical profile groundwater sampling, benzene was detected in the shallow and deep groundwater above GCTLs. As a result, a total of five permanent monitoring wells were installed in October 2014. Two of the monitoring wells (T23/24-MW3 and T23/24-MW4) were screened in the deep interval (approximately 15 to 25 feet BGS), and the remaining three wells (T23/24-MW1, T23/34-MW2, and T23/24-MW5) were screened in the shallow zone (approximately 5 to 15 feet BGS). Each well was sampled in December 2014 and analyzed for benzene and TPH.
- 2015 Supplemental RI: Based on the initial RI results, supplemental field activities (well installation and groundwater sampling) were conducted in October and December 2015 to complete the objectives for the RI, as recommended by the stakeholders during quarterly status meetings held on April 21, 2015, and August 11, 2015. An additional round of groundwater samples from the five permanent wells was collected in October 2015 to confirm the initial groundwater sample results. Based on the October 2015 sampling results, one additional shallow monitoring well (T23/24-MW6) was installed in November 2015, and groundwater samples were collected for VOCs and TPH analyses. In addition, it was requested that the laboratory provide other VOC results for the initial rounds of sampling. Based on the two

rounds of sampling from the permanent monitoring wells installed during the RI field activities, benzene and isopropylbenzene are the only two constituents detected in groundwater above GCTLs. None of the other VOCs or TPH was detected in groundwater at UST-23 and UST-24 above GCTLs.

- An FFS for UST-23 and UST-24 (ANG, 2017) was finalized in April 2017. The purpose of the FFS was to evaluate the COCs and cleanup goals and to evaluate remedial alternatives. Based on ANG comparative analysis of the alternatives presented in the FFS, Alternative 4 (in-situ bioremediation of benzene and isopropyl benzene, NAM, and ICs) was selected at UST-23 and UST-24.

2.3 Community Participation

NCP Section 300.430(f) (3) establishes the public participation activities that the lead agency must conduct following preparation of the PP and review by the support agency. Components of these items and documentation of how each component was satisfied for UST-16, UST-23, and UST-24 are described in **Tables 2-1 and Table 2-2** below.

Table 2-1. Public Notification of Document Availability

Requirement:	**Satisfied by:**
Notice of availability of the PP must be made in a general circulation major local newspaper.	Notice of PP availability and 30-day public comment period from March 16 to April 14, 2020 were published in the legal notice section of the Florida Times-Union on March 9, 2020.
Notice of availability should consist of the following information: • Site name and location • Date and location of public meeting • Identification of lead and support agencies • Request for public comments • Public participation opportunities including: – Location of information repositories and Administrative Record file – Methods by which the public may submit written and oral comments, including a contact person – Dates of public comment period	Notice of availability included all of these components and is included for reference as Attachment 2 to this ROD.

Table 2-2. Public Comment Period Requirements

Requirement:	Satisfied by:
Lead agency should make document available to public for review on same date as newspaper notification.	The PP for UST-16. UST-23, and UST-24 was made available to the public on March 16, 2020 at the Highlands Branch Public Library in Jacksonville, FLA and online. The legal notice of the PP is provided as Attachment 2 to this ROD.
Lead agency must ensure that all information that forms the basis for selecting the response action is included as part of the Administrative Record file and made available to the public during the public comment period.	ANG headquarters located at Joint Base Andrews maintains the USAF Administrative Record file for UST-16, UST Site-23, and UST-24. All data collected and all CERCLA primary documents produced for UST-16, UST-23, and UST-24 are maintained as part of this file, which is available to the public online. A link to the USAF Administrative Record online database was provided in the legal notice and can be accessed at https://ar.afcec-cloud.af.mil.
CERCLA Section 117(a)(2) requires the lead agency to provide the public with a reasonable opportunity to submit written and oral comments on the PP. NCP Section 300.430(f)(3)(i) requires the lead agency to allow the public a minimum of 30 days to comment on the RI/FS and the PP and other supporting information located in the administrative record and information repository.	The ANG provided a public comment period for the PP from March 16 to April 14, 2020.
The lead agency must extend the public comment period by at least 30 additional days upon timely request.	The ANG received no requests to extend the public comment period.
The lead agency must provide the opportunity for a public meeting to be held at or near the site during the public comment period. A transcript of this meeting must be made available to the public and be maintained in the Administrative Record and information repository for the site (pursuant to NCP Section 300.430(f)(3)(i)(E)).	No comments or requests for public meeting were received from the public during the public comment period; therefore, no public meeting was held.

2.4 Site Characteristics

2.4.1 Physiography and Climate

The FLANGB is co-located adjacent to the Jacksonville IAP in Jacksonville, Florida and is approximately ten miles north of the City of Jacksonville. The regional topography is influenced by a series of seven ancient marine terraces formed through successive incremental lowering of the sea level during Pleistocene glaciation. During each interim sea level change, a portion of the emerging sea floor was exposed as a level plain or terrace. Jacksonville is situated on the Wicomico terrace, 70 to 100 feet above mean sea level (AMSL), and it extends through south-central Duval County and western Nassau County into Georgia, trending parallel to the present Atlantic Ocean shoreline. The topography across the base and in its general vicinity displays very low relief, as the elevation of the ground surface is approximately 20 to 28 feet AMSL.

The Jacksonville area, which includes the FLANGB, is drained through the St. Johns and Nassau Rivers and their tributaries. The waters of the St. Johns River and the lower portion of its tributaries are impacted by tides throughout Duval County. Surface drainage is sluggish, and the streams form a dendritic pattern in the flat, marshy areas surrounding the Jacksonville IAP. Cedar Creek is the nearest major drainage feature to the Base. Several unnamed tributaries drain the Base and discharge to Cedar Creek. The waters of Cedar Creek flow in a southeasterly direction and discharge into the Broward River, which discharges into the St. Johns River.

2.4.2 Geology/Hydrology

The regional geology of northeast Florida consists primarily of Eocene limestone (Ocala Group, Avon Park Limestone and Lake City Limestone) overlain by the Hawthorn Group, which consists of interbedded sand, clay, shale, and silty limestones. The soil types include:

- Lake City Limestone – alternating beds of lignite, chalky to granular limestone and massive to finely crystalline dolomite.
- Avon Park Limestone – overlies the Lake City Limestone in northeast Florida and the unit has been considerably thinned by erosion to approximately 50 feet in thickness in the study area.
- Ocala Group – subdivided into three carbonate sub-formations, which all consist of fragmental marine limestones and distinguished by slight changes in lithology and fossil content.
- Hawthorn Group – overlies the Ocala Group, filling erosional depressions in the surface of the Ocala Group.
- Upper Miocene or Pliocene deposits – overlies the Hawthorn group, occasionally exposed at the surface in deep road cuts or banks of the incised rivers.

In northeast Florida, groundwater occurs in two separate hydrogeologic systems: the deeper Floridian Aquifer system and a shallow aquifer that includes the water table.

Shallow surficial aquifer – situated above the Floridian aquifer and is composed of unconsolidated sediments such as limestones, shales and sands. This aquifer includes the water table, which is encountered at approximately 5 feet BGS and fluctuates with rainfall. The aquifer is primarily recharged through slow infiltration of rainfall, and regional groundwater flow is generally to the east-southeast, with localized variation (often to the northwest and west) in the northern portion of the base due to a small mound in the middle of the installation and variations in rainfall.

Floridian Aquifer system–artesian aquifer that begins at approximately 475 feet BGS at the installation and includes multiple water bearing formations: the Ocala group, the Lake City limestone and the Oldsmar limestone. This Aquifer system provides the major source of potable water for the Jacksonville area and the installation.

2.5 Nature and Extent of Contamination

2.5.1 UST-16

UST-16 site assessment activities conducted in 2011 included the collection of five soil samples and one groundwater sample. Soil samples were analyzed for VOCs, SVOCs, TRPH, PCBs, and select metals (i.e., arsenic, lead, cadmium, and chromium). The groundwater sample was analyzed

for VOCs, SVOCs, EDB, TPH, PCBs, and select metals (i.e., arsenic, lead, cadmium, and chromium). The site assessment concluded that one soil sample exceeded the EPA soil screening level for leachability of lead to groundwater and that the PAH constituent, B(a)P, and calculated B(a)P EQ in one soil sample exceeded the Florida SCTL. No constituents were detected in groundwater above Florida GCTLs.

Based on the site assessment findings, additional soil and groundwater sampling was conducted in RI activities in 2014 and 2015 to delineate the horizontal and vertical extents of lead and PAHs in soil and to lead in groundwater. A site-specific lead SCTL of 49.8 mg/kg for soil leachability to groundwater was developed in accordance with FDEP guidance at that time (ANG, 2016).

The 2014 RI results concluded that lead and the PAHs B(a)P and benzo[a]anthracene were the only analytes detected in soil above the SCTLs for leachability to groundwater. No chemicals were detected in groundwater in a temporary monitoring well (T16-TW1) above GCTLs; however, because of the lead leachability exceedance in soil, it was recommended that permanent monitoring wells be installed and sampled for lead. Two shallow (T16-MW2 and T16-MW3) and two deep (T16-MW1 and T16-MW4) monitoring wells were installed and sampled to further assess lead in groundwater. Lead was not detected in any of the groundwater samples collected from the wells at UST-16.

In summary, analysis of the sample data concluded that PAHs, specifically B(a)P and B(a)P EQ. were potential human health COCs in soil; no other human health COCs were identified in soil or groundwater. Lead, B(a)P, and benzo[a]anthracene in soil were identified above the SCTLs for leachability to groundwater. The locations of B(a)P and B(a)P EQ exceedances in soil are shown on **Figure 1-3.** The locations of lead exceedances in soil are shown on **Figure 1-4**.

An FFS for UST-16 was finalized in April 2017 (ANG, 2017). The purpose of the FFS was to evaluate the COCs, cleanup goals, and evaluate remedial alternatives. Based on a comparative analysis of remedial alternatives, the excavation with offsite disposal to attain residential soil SCTLs alternative was recommended for implementation at UST-16.

Following submittal of the FFS, a project review meeting was conducted with the ANG, FLANG, and the City of Jacksonville EQD regulator in November 2017. During this meeting, it was recommended by the project team that, prior to the excavation alternative being implemented, a PAH Analysis of background and site soil, SPLP soil lead analysis, and one round of groundwater analysis of lead at the four existing monitoring wells at UST-16 be considered to evaluate if UST-16 meets NFA criteria. Should this analysis not be successful in demonstrating NFA criteria, the remedial alternative of Excavation with Offsite Disposal to Attain Residential SCTLs (Alternative 4) will be implemented at UST-16.

2.5.2 UST-23 and UST-24

UST Removal activities in 1995 included a limited source (soil) removal along with the USTs. During a 2011 site investigation, soil samples were collected at depths ranging from 2 to 6 feet BGS and analyzed for benzene, toluene, ethylbenzene, xylene, TPH, and PAHs. As shown on **Figure 1-5**, none of the detected constituents exceeded SCTLs for unrestricted direct exposure or leachability to groundwater (ANG, 2012).

During 2011 site investigation, benzene and TPH were detected in groundwater above the GCTLs. In 2014, groundwater samples from vertical profile borings also exhibited benzene and TPH detections above GCTLs. However, groundwater samples collected from the permanent

monitoring wells in 2014 and 2015 exhibited only benzene exceedances above GCTLs in one shallow well (T23/24-MW5) and isopropyl benzene exceedances above the GCTL in one deep well (T23/24-MW3) and one shallow well (T23/24-MW5). The monitoring wells and locations of groundwater exceedances of the GCTLS are identified on **Figure 1-6**.

An FFS for UST-23 and UST-24 was finalized in April 2017 (ANG, 2017). The purpose of the FFS was to evaluate the COCs, RAOs, cleanup criteria, and remedial alternatives. Based on ANG comparative analysis of the alternatives presented in the FFS, Alternative 4 (in-situ bioremediation of benzene and isopropyl benzene, NAM, and ICs) was selected at UST-23 and UST-24.

2.6 Summary of Site Risks

2.6.1 Summary of Human Health Risk Assessment

A human health risk assessment (HHRA) was conducted for UST-16, UST-23, and UST-24 as part of the RI (ANG 2016). The objective of the HHRA was to evaluate and document the potential risks to human health associated with current and potential future exposures to COCs at these sites if no remedial action is taken. This assessment represents the risks for the "no action" alternative for this FFS. The HHRA evaluates potential exposures to groundwater and soil for appropriate receptors at the base. The results of the HHRA identified COCs that pose a threat to human health and the environment at the sites, and remedial alternatives were developed accordingly to address those COCs.

The 125th FW is located adjacent to Jacksonville IAP. The base is fenced, with only one access point at the main gate, which is guarded by base security forces. The FLANGB property is leased from the IAP until the year 2035, and the current land use is Public Buildings and Facilities. The surrounding property is not likely to be developed for residential use because much of this land is owned by the airport or is a designated wetland area. The nearest residential development is approximately 0.75 mile to the west. The IAP Master Plan and Airport Noise Control Land Use Compatibility Studies support a long-term commitment to restrictions on residential land use in the area surrounding the airport, and future residential redevelopment of the facility is not likely (ANG, 2017).

UST-16, UST-23, and UST-24 are extremely small (much less than 0.25 acres). UST-16 is surrounded by a road, an open-sided storage building, and the concrete apron. The samples collected during the site assessment and RI field activities were from an approximately 20- by 25-feet area. UST-23 and UST-24 are surrounded by two buildings and the concrete apron. Samples collected during the site assessment and RI field activities were from an approximately 20- by 20-feet area (ANG, 2012).

Representative receptors for current and future land use are an Industrial/Commercial Worker and a Construction Worker. In addition to these receptors, the HHRA evaluated a Residential Receptor to provide a baseline assessment for a no action alternative. These receptors are further discussed below.

Industrial/Commercial Worker – Plausible onsite workers include maintenance workers, security guards, military personnel, contractors, and others who regularly visit the site and are incidentally exposed to surface soil as they walk across the ground. Potential pathways for exposure to soil at UST-16 include incidental ingestion, dermal contact, and inhalation of dust. Exposure to vapors is not a complete pathway because the COCs in soil (PAHs) are not volatile. No COCs were identified in soil at UST-23 and UST-24 (ANG, 2017).

Construction Worker – Exposure may result from excavation and grading activities, as well as incidental exposure during building projects. Potential pathways for exposure to soil include incidental ingestion and dermal contact. For soil at UST-16, exposure to vapors is not a complete pathway because the COCs in soil (PAHs) are not volatile. No COCs were identified in soil at UST-23 and UST-24 (ANG, 2017).

Onsite Resident – Although it is unlikely that these sites will be developed for residential purposes, an onsite residential scenario was evaluated to provide additional information and perspective to risk managers. Generally, sites that "pass" a residential risk assessment can be released for use without restriction. Hypothetical future onsite residents may be exposed to soil via incidental ingestion, dermal contact, and inhalation of dust. The hypothetical onsite resident also could be exposed to groundwater under future site-use conditions if onsite wells were developed in the shallow aquifer as a source of potable water. Groundwater is evaluated as if it were developed as a source of drinking water for future residents even though groundwater at these sites is not used as a potable source and there are no plans to develop it as a potable source in the future. Potential pathways included ingestion of groundwater used as drinking water, dermal contact, and inhalation of VOCs during household water use.

2.6.2 Summary of COCs

The HHRA identified PAHs (as B(a)P EQs) as COCs in soil at UST-16 under both residential and industrial/commercial land use scenarios. No other COCs were identified in soil, and no COCs were identified in groundwater at UST-16. Lead, B(a)P, and benzo[a]anthracene in soil were identified above the SCTLs for potential leachability to groundwater.

The HHRA identified benzene and isopropylbenzene as COCs in groundwater for UST-23 and UST-24. No COCs were identified in soil.

2.6.3 Basis for Action

The response action selected in this ROD is necessary to protect public health or welfare or the environment from actual or threatened releases of pollutants or contaminants from UST-16, UST-23, and UST-24 which may present an endangerment to public health or welfare.

2.7 Remedial Action Objectives

RAOs provide a general description of what the cleanup will accomplish. These goals typically serve as the design basis for the remedial alternatives developed for the sites. Per the risk assessment for the three sites, the COCs do not pose an ecological risk given the limited habitat quality and quantity and the lack of complete ecological exposure pathways. Thus the RAOs were driven by risks to human health.

PAHs (as B(a)P EQs) were identified as COCs in soil at UST-16 under both residential and industrial/commercial land use scenarios above direct-contact SCTLs. While lead and benzo[a]anthracene in soil were evaluated for site-specific leachability to groundwater, none of the lead or benzo[a]anthracene concentrations exceeded direct-contact SCTLs and are not considered a COC. However, the remedial excavation proposed to address the PAH contamination in soil at UST-16 will also address the lead and benzo[a]anthracene leachability potential at UST-16 due to the overlap in the extent of PAH and lead contamination. No other COCs were identified in soil or groundwater at UST-16.

Benzene and isopropylbenzene were identified as COCs in groundwater for UST-23 and UST-24 above GCTLs and pose a risk to human health. No other COCs were identified in soil or groundwater at UST-23 and UST-24 .

The selected corrective action will minimize exposure to contaminant concentrations in soil and groundwater and achieve the optimum tradeoff with respect to such factors as effectiveness, implementability, and cost. The following RAOs were identified for the sites:

- UST-16: Minimize or eliminate contact with PAH contamination in soil exceeding background and residential SCTLs and minimize or eliminate lead and benzo[a]anthracene exceeding background and SCTLs for leachability at UST-16.
- UST-23 and UST-24 : Reduce benzene and isopropylbenzene concentrations in groundwater through in-situ bioremediation of benzene and isopropyl benzene and NAM, to below the Florida GCTLs of 1 and 0.8 µg/L, respectively. Implement ICs in accordance with FDEP requirements until GCTLs are attained.

2.8 Description of Remedial Alternatives

2.8.1 UST-16 Remedial Alternatives Evaluated in FFS

Alternative 1 – No action. This alternative would involve no action to reduce contaminant concentrations in the soil, and no actions would be taken to prevent human exposure. Access to contaminated soil would be unrestricted, allowing potential exposure to it. This option is not considered viable because it would not provide a reliable or effective method for protecting human health and the environment.

Alternative 2 – ICs and Engineering Controls (ECs). This alternative consists of implementing ICs, including ECs, to restrict exposure to the contaminated soil. This alternative would provide a readily implementable, effective approach with moderate long-term reliability with respect to preventing inadvertent human exposure to contaminated soil; however, ICs alone will not provide treatment solution. The cost for implementing ICs is very high in comparison to the no action alternative.

Alternative 3 – Excavation of 36 tons of soil with offsite disposal to attain industrial/commercial SCTLs, with ICs. This alternative would provide a readily implementable, effective approach with high long-term reliability with respect to preventing inadvertent human exposure to contaminated soil. The removal of contaminated soil exceeding the direct-contact industrial/commercial SCTLs would eliminate the risk of future potential exposure for the industrial/commercial land use. ICs designating the current and future site use for industrial/commercial purposes will also prevent any exposure under a residential land use scenario. The cost for implementing the ECs (asphalt cap) and ICs is very high in comparison to the no action alternative.

Alternative 4 – Excavation of 50 tons of soil with offsite disposal to attain residential SCTLs. This alternative would provide a readily implementable, highly effective approach with the highest long-term reliability with respect to preventing inadvertent human exposure to contaminated soil. The removal of contaminated soil exceeding the direct-contact residential SCTLs would eliminate the risk of future potential exposure for residential land use. ICs would not be required under this alternative because the remedy would be protective of residential land use conditions. The cost for implementing this remedy is moderately high in comparison to the no action alternative.

2.8.2 UST-23 and UST-24 Remedial Alternatives Evaluated in the FFS

Alternative 1 – No action. This alternative would involve no action to reduce contaminant concentrations in the groundwater plume and return the impacted groundwater to beneficial use, and no actions would be taken to prevent human exposure. Access to contaminated groundwater would be unrestricted, allowing potential exposure to contaminated media, and natural attenuation of the groundwater would not be monitored. This option is not considered viable because it would not provide a reliable or effective method for protecting human health and the environment.

Alternative 2 – ICs. This alternative consists of implementing permanent ICs to restrict groundwater use at the Base. Verification of ICs and continued implementation of this alternative will occur during CERCLA five-year reviews. This alternative would provide a readily implementable, effective approach with moderate long-term reliability with respect to preventing inadvertent human exposure to contaminated groundwater; however, ICs alone will not provide treatment solution. The cost for implementing ICs is moderately high in comparison to the no action alternative.

Alternative 3 – NAM, ICs. NAM relies on natural attenuation processes, both biotic and abiotic, to achieve site-specific remediation objectives within a timeframe that is reasonable. Natural attenuation processes include abiotic degradation, adsorption, biotic degradation, chemical oxidation or reduction, dilution and dispersion, and hydrolysis or similar processes. Biotic degradation tends to dominate in most aquifers and is classified as either aerobic or anaerobic. NAM would involve monitoring of contaminant levels to ensure that the mass of contamination in the groundwater is reducing with time. NAM is a very easy technology to implement and would utilize existing site monitoring wells.

ICs would be used in conjunction with NAM to ensure the protection of human health and the environment over the implementation time required to meet the remedial goal. NAM is a highly effective cleanup approach that can provide a reduction in the site COC concentrations. The cost for NAM is comparatively high due to the 30-year monitoring period. However, based on the low COC concentrations and relatively small extent of the groundwater plume, it is anticipated that remedial goals would be attained in a much shorter timeframe. Implementation of Alternative 3 is expected to achieve UU/UE status at UST-23 and UST-24.

Alternative 4 –NAM, in-situ bioremediation, and ICs. This alternative has the same benefits as Alternative 3 above but includes further enhancement of the remedial process by in-situ bioremediation efforts in the first 2 years. The cost for Alternative 4 is $36,432 dollars more than Alternative 3 (based on the 30-year monitoring period). However, the controlled release of oxygen into the subsurface over time via placement of ORC® socks will promote aerobic biodegradation of contaminants and enhance the remedial process to provide greater assurance of attaining contaminant concentrations below GCTLs in a shorter remedial time period than Alternative 3.

ICs would be used in conjunction with NAM and the in-situ bioremediation efforts to ensure the protection of human health and the environment over the implementation time required to meet the remedial goal. Implementation of Alternative 4 is expected to achieve UU/UE status at UST-23 and UST-24.

2.9 Comparative Analysis

This section provides a brief comparative analysis of the alternatives with respect to the evaluation criteria. The comparative analysis identifies the advantages and disadvantages of the alternatives

relative to each other and identifies the preferred alternative for UST-16, UST-23, and UST-24 from this evaluation. **Table 2-3** and **Table 2-4** summarize the comparative analysis of alternatives for UST-16, UST-23, and UST-24.

2.9.1 UST-16 Comparative Analysis

2.9.1.1 Overall Protection of Human Health and the Environment

Alternative 1 (no action) would offer no protection of human health and the environment. Alternative 2 (ICs and ECs) would provide protection and minimize potential risks but provides no remedial alternative. Alternative 3 (excavation and offsite disposal to attain industrial/commercial GCTLs) would provide improved protection over an extended timeframe, but it would involve ICs and long-term O&M. Alternative 4 (excavation and offsite disposal to attain residential GCTLs) would provide full long-term protection in a decreased timeframe through active remediation to attain the most stringent SCTLs for unrestricted reuse conditions. Implementation of ICs (industrial/commercial land use and dig restrictions) to protect human health and the environment is included in Alternatives 2 and 3. Alternative 4, in the short term, is the least protective to human health and the environment due to potential exposure to contaminated soil during excavation activities. However, appropriate health and safety procedures and personal protective equipment (PPE) will be utilized to minimize the potential for exposure. Alternatives 2, 3, and 4 would achieve full protectiveness at the end of the remedy.

2.9.1.2 Compliance with ARARs

Alternative 1 is not compliant with ARARs because no attempt would be made to reduce contamination. Alternatives 2, 3, and 4 are all compliant with ARARs, with the primary difference being the time required to achieve compliance. Alternatives 2 and 3 both involve ICs and long-term O&M to maintain protectiveness. Alternative 4 achieves compliance with ARARs within the shortest timeframe and also does not have any IC and O&M requirements

2.9.1.3 Long-term effectiveness and permanence

Alternative 1 would not have long-term reliability, effectiveness, or permanence. Alternatives 2 and 3 will have good long-term effectiveness and will rely on ICs. Alternative 2 will also include land use controls (LUCs) (asphalt cap and dig restrictions) to provide long-term effectiveness. Alternatives 3 and 4 both include active removal of the contamination to attain remedial goals protective of industrial/commercial land use and residential land use, respectively.

2.9.1.4 Reduction of toxicity, mobility, or volume through treatment

Alternatives 1 and 2 provide no reduction in the toxicity, mobility, or volume of contamination because the alternatives do not involve active remediation. Alternatives 3 and 4 involve excavation and offsite disposal of the contaminated soil, thereby reducing the toxicity and volume of contaminants. While Alternative 3 removes contaminated soil exceeding industrial/commercial SCTLs, Alternative 4 provides the maximum benefit by removing contaminated soil exceeding the residential SCTLs.

Table 2-3. Comparative Analysis of Remedial Action Alternatives for UST-16

Remedial Action Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility or Volume Through Treatment	Short-Term Effectiveness	Implementability	Total Present Value Cost[a]
1–No Action	○	○	○	○	◒	●	$0
2–ICs and LUCs	●	●	●	○	◒	◒	$286,255
3–Excavation with Offsite Disposal and ICs for Industrial/ Commercial Land Use	●	●	●	◒	◒	◒	$252,877
4–Excavation with Offsite Disposal to Attain Residential Land Use	●	●	●	●	●	●	$96,602

a = The discounted rate is included in the total cost for Alternatives 2 and 3. A discounted rate is not applicable to Alternative 4.
ARAR = Applicable or Relevant and Appropriate Requirement
IC = Institutional Control
LUC = Land Use Control
UST = Underground Storage Tank
● = Fully meets criterion
◒ = Partially meets criterion
○ = Does not meet criterion

Table 2-4. Comparative Analysis of Remedial Action Alternatives for UST-23 and UST-24

Remedial Action Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-Term Effectiveness and Permanence	Reduction in Toxicity, Mobility or Volume Through Treatment	Short-Term Effectiveness	Implementability	Total Present Value Cost[a]
1–No Action	○	○	○	○	◒	●	$0
2–ICs and LUCs	●	●	●	○	◒	●	$253,086
3–NAM and ICs to attain UU/UE	●	●	●	◒	●	●	$656,450
4 – NAM, In-Situ Bioremediation, and ICs to attain UU/UE	●	●	●	●	●	◒	$692,882

a = The discounted rate is included in the total cost for Alternatives 2 and 3. A discounted rate is not applicable to Alternative 4.
ARAR = Applicable or Relevant and Appropriate Requirement
IC = Institutional Control
LUC = Land Use Control
UST = Underground Storage Tank
UU/UE = Unrestricted Use/Unrestricted Exposure
● = Fully meets criterion
◒ = Partially meets criterion
○ = Does not meet criterion

2.9.1.5 Short-term effectiveness

Alternatives 1 and 2 will not achieve short-term effectiveness, as no active remediation is proposed. No impact to workers, the community, or the environment would occur under these alternatives. Alternative 2 poses minimal risk to onsite workers during placement of an asphalt cap. Alternatives 3 and 4 pose some short-term risk to onsite workers during excavation activities or to the community during transportation of contaminated soil; however, this risk will be mitigated through appropriate health and safety procedures and proper use of PPE.

2.9.1.6 Implementability

Alternative 1 will be easy to implement because no construction or active remediation is needed under this alternative. Alternative 2 involves placement of an asphalt cap over the contaminated soil but will be easy to implement using standard industry practices. Alternatives 3 and 4 require excavation that is a commonly used remedial technology with services and materials readily available for implementation. Under Alternatives 2 and 3, ICs will also be easily implemented in accordance with FDEP requirements.

2.9.1.7 Cost

Table 2-5 summarizes the present value costs to implement each remedial alternative at UST-16.. The present value analysis used a discount rate of 1.5% and an O&M period of 30 years for applicable alternatives. Changes in the cost elements may accrue as a result of new information and data collected during the detailed design of the remedial alternatives. Major changes would be documented in the form of a memorandum in the Administrative Record file, or a Decision Document amendment. This is an order-of-magnitude cost estimate that is expected to be within +50 to -30% of the actual cost.

2.9.2 UST-23 and UST-24

2.9.2.1 Overall Protection of Human Health and the Environment

Alternative 1 (no action) would offer no protection of human health and the environment. Alternative 2 (ICs) would provide protection and minimize potential risks but provides no remedial alternative. Alternative 3 (NAM and ICs) and Alternative 4 (in-situ bioremediation, NAM, and ICs) would provide improved protection over an extended timeframe documenting a reduction in contaminant concentrations via natural attenuation processes. Alternative 4 would provide further enhancement of the remedial process by promoting aerobic subsurface conditions via controlled release of oxygen into the subsurface over time. Implementation of ICs (prohibition of groundwater use and prohibition of well installation for use as a water supply) to protect human health and the environment are included until the remedial goal is achieved in Alternatives 2, 3, and 4. While Alternative 2 only includes monitoring during the five-year CERCLA review, Alternatives 3 and 4 include at least annual monitoring of the groundwater plume while ICs are in place. Alternatives 2, 3, and 4 minimize exposure to contaminated groundwater or hazardous chemicals. Alternative 4 poses some risk of potential chemical exposure during the ORC® sock installation and replacement activities. Alternatives 2, 3, and 4 would achieve full protectiveness at the end of the remedy.

Table 2-5. Cost Summary of Remedial Action Alternatives for UST-16

Remedial Action Alternative	Duration (years)	Non-Discounted Cost			Net Present Value
		Capital Cost	O&M Cost	Total	Total
1 – No Action	0	$0	$0	$0	$0
2 – ICs and LUCs	30	$83,691	$256,635	$340,326	$286,255
3 – Excavation with Offsite Disposal and ICs for Industrial/Commercial Land Use	30	$91,866	$207,727	$296,593	$252,877
4 – Excavation with Offsite Disposal to Attain Residential Land Use	1	$96,602	$0	$96,602	$96,602

IC = Institutional Control
LUC = Land Use Control
O&M = Operation and Maintenance
UST = Underground Storage Tank
Discount rate = 1.5%

2.9.2.2 Compliance with ARARs

Alternative 1 is not compliant with ARARs because no attempt would be made to reduce contamination. Alternatives 2, 3, and 4 are all compliant with ARARs, with the primary difference being the time required to achieve compliance. While Alternatives 2, 3, and 4 all include ICs and long-term O&M, it is anticipated that Alternative 3 (NAM) and Alternative 4 (in-situ bioremediation, NAM, and ICs) will attain remedial goals in a much shorter timeframe than the default conservative 30-year O&M period. This is a reasonable assumption given the relatively small extent of the contaminant plume and the slight exceedance of the COC concentrations above GCTLs. As a conservative approach, a 30-year groundwater monitoring period is used in determining the costs for Alternatives 2, 3, and 4. Sensitivity analysis was also conducted on the total present value cost for Alternative 3 versus Alternative 4 to evaluate the impact of attaining RAOs in a much shorter timeframe as compared to the conservative 30-year period used in the cost estimate. This analysis concluded that Alternative 3 would still be more cost-effective as compared to Alternative 4 in attaining RAOs.

2.9.2.3 Long-term effectiveness and permanence

Alternative 1 would not have long-term reliability, effectiveness, or permanence. Alternatives 2, 3, and 4 will have good long-term effectiveness and will rely on ICs while observing degradation of benzene and isopropyl benzene in groundwater. Alternatives 3 and 4 include at least annual monitoring to document natural attenuation of the contaminant plume. Alternative 4 would provide further enhancement of the remedial process by promoting aerobic subsurface conditions via controlled release of oxygen into the subsurface over time.

2.9.2.4 Reduction of toxicity, mobility, or volume through treatment

Alternatives 2, 3, and 4 eventually reduce the toxicity and volume of contaminants, albeit through slow attenuation mechanisms. Alternative 4 would include enhancement of the natural attenuation processes by use of ORC® socks to promote aerobic conditions and reduce the toxicity and volume of COCs in groundwater. Alternatives 3 and 4 can easily assess changes in the plume through frequent monitoring of plume conditions.

2.9.2.5 Short-term effectiveness

Alternatives 1, 2, and 3 will not achieve short-term effectiveness as no active remediation is proposed. Alternative 1 (no action) poses no risk to onsite workers or the community during implementation. Alternative 2 (ICs) and Alternative 3 (NAM) will pose minimal risk to site workers during the collection of contaminated groundwater. Alternative 4 (in-situ bioremediation) poses only a slightly higher risk to workers during the placement and removal of ORC® socks in monitoring well UST-23/24-MW5. Short-term risks identified in Alternatives 2, 3, and 4 will be minimized by health and safety procedures and proper use of PPE.

2.9.2.6 Implementability

Alternatives 1, 2, and 3 will all be easy to implement because none of these alternatives will require active remediation. Under Alternatives 2 and 3, NAM is readily implementable because minimal construction will be required to implement this action. The protocols for NAM evaluation are well established, as well as the technical feasibility of NAM for petroleum hydrocarbons. Under Alternative 4, the in-situ bioremediation efforts will also require minimal disruption to the site, as the ORC® socks will be placed in situ and replaced on a semiannual basis. ICs are easily implemented with restrictions on groundwater use and groundwater accessibility until the remedial goal is achieved. Materials, equipment, and labor for groundwater sampling are readily available.

2.9.2.7 Cost

Table 2-6 summarizes the present value costs to implement each remedial alternative at UST-23 and UST-24. The present value analysis used a discount rate of 1.5% and an O&M period of 30 years for applicable alternatives. Changes in the cost elements may accrue as a result of new information and data collected during the detailed design of the remedial alternatives. Major changes would be documented in the form of a memorandum in the Administrative Record file, or a Decision Document amendment. This is an order-of-magnitude cost estimate that is expected to be within +50 to -30% of the actual project cost.

Table 2-6. Cost Summary of Remedial Action Alternatives for UST-23 and UST-24

Remedial Action Alternative	Duration (years)	Non-Discounted Cost			Net Present Value
		Capital Cost	O&M Cost	Total	Total
1 – No Action	0	$0	$0	$0	$0
2 – ICs and LUCs	30	$17,342	$300,657	$317,999	$253,086
3 – NAM and ICs to attain UU/UE	30	$70,809	$735,007	$805,816	$656,450
4 – NAM, In-Situ Bioremediation, and ICs to attain UU/UE	30	$79,240	$763,528	$842,768	$692,882

IC = Institutional Control
LUC = Land Use Control
O&M = Operation and Maintenance
UST = Underground Storage Tank
UU/UE = Unrestricted Use/Unrestricted Exposure
Discount rate = 1.5%

2.10 Selected Remedy

2.10.1 UST-16 Excavation with Offsite Disposal to Attain Residential SCTLs

The ANG 2017 ROD developed remedial alternatives for individual and comparative evaluation using seven of the nine evaluation criteria established by EPA to address CERCLA criteria and statutory considerations. A detailed analysis of the alternatives was conducted against the "threshold" and "balancing" criteria, followed by a comparative analysis to determine the advantages or disadvantages of each alternative with respect to each other.

Four remedial alternatives were evaluated to address soil contamination at UST-16:

- Alternative 1: No Action
- Alternative 2: ICs and ECs
- Alternative 3: Excavation with Offsite Disposal to Attain Industrial/Commercial SCTLs, ICs
- Alternative 4: Excavation with Offsite Disposal to Attain Residential SCTLs

Based on the comparative analysis of alternatives in the 2017 FFS and responsiveness summary of public and regulators, Alternative 4 is selected for implementation at UST-16. Alternative 4 meets the RAOs for UST-16 and provides the best balance of cost and overall protection, while providing an effective, long-term solution. Under this proposed alternative, all contaminated soil with COC concentrations (i.e., PAH concentrations) exceeding residential SCTLs will be excavated and disposed offsite. The excavation will be backfilled with clean native fill material and seeded with grass cover to restore the excavated area to the surrounding site conditions. There will be no O&M activities or five-year CERCLA reviews necessary under this alternative because the remedial action will attain SCTLs protective of residential land use conditions. The total present value cost for recommended Alternative 4 at UST-16 is estimated to be $692,882.

As discussed in Sections 1.4.1 and 4.1.1, Alternative 4 will be implemented based on the results of an optional background analysis, SPLP analysis, and groundwater lead analysis to confirm the that the remedial alternative is warranted at this site.

2.10.2 UST-23 and UST-24 In-Situ Bioremediation, NAM, and ICs

Four remedial alternatives were developed and evaluated to address groundwater contamination at UST-23 and /UST-24:

- Alternative 1: No Action
- Alternative 2: ICs
- Alternative 3: NAM and ICs
- Alternative 4: NAM, In-situ Bioremediation, and ICs

Based on the comparative analysis of alternatives in the 2017 FFS and responsiveness summary of public and regulators, Alternative 4 is selected for implementation at UST-23 and UST-24. Alternative 4 meets the RAOs for UST-23 and UST-24 and provides the best balance of cost and overall protection, while providing an effective, long-term solution.

Based on ANG comparative analysis of the alternatives presented in the FFS, Alternative 4; in-situ bioremediation of benzene and isopropyl benzene, NAM, and ICs was selected at UST-23 and UST-24. In-situ bioremediation efforts of benzene and isopropyl benzene would be conducted in the first 2 years. Groundwater monitoring of COCs (benzene and isopropyl benzene) and natural attenuation parameters would be conducted on a quarterly basis for the first year to establish baseline conditions and account for seasonal variations. Semiannual sampling would be conducted during the second year followed by annual sampling in years 3 through 30. Groundwater monitoring and CERCLA five-year reviews would be conducted until remedial goals are achieved.

Based on the limited extent of the contaminant plume and COC concentrations only slightly exceeding the GCTLs, it is anticipated that remedial goals will be attained in a much shorter timeframe compared to the conservative 30-year O&M period. All existing monitoring wells would be abandoned once RAOs are achieved, and the ICs will be terminated or amended, as appropriate, in accordance with FDEP requirements. The total present value cost for recommended Alternative 4 at UST-23 and UST-24 is estimated to be $$692,882.

2.11 Statutory Determinations

CERCLA requires remedial actions to meet federal standards, requirements, criteria, limitations, or more stringent state standards which are determined to be legally ARAR to the circumstances at each site. This section describes the ARARs for UST-16, UST-23, and UST-24. The FFS evaluated and identified federal and state requirements used as ARARs and TBCs to ensure the selected remedy will be protective of both human health and the environment (ANG, 2017). The following sections discuss how the selected remedy at UST-16, UST-23, and UST-24 meet these statutory requirements. ARARs were identified based on the suspected sources of contamination, historical site information, and the known or potential effects of contaminants on the environment.

ARARs fall into three categories: chemical-specific, location-specific, and action-specific. Chemical-specific ARARs are health-based or risk-management-based numbers that provide concentration limits for the occurrence of a chemical in the environment at agreed-upon points of compliance. Location-specific ARARs restrict activities in certain sensitive environments. Action-

specific ARARs are activity-based or technology-based, and typically control remedial activities that generate hazardous wastes (such as with those covered under the RCRA). Offsite shipment, treatment and disposal of excavated contaminated soil invoke action-specific ARARs.

Criteria To Be Considered (TBCs) are non-promulgated advisories or guidance issued by federal or state government that are not legally binding and do not have the status of potential ARARs; however, in many circumstances, TBCs are considered along with ARARs.

2.11.1 Chemical-Specific Requirements

Chemical-specific requirements include limitations set on the amount or concentration of a chemical that can be either present in or discharged to the environment under promulgated federal and/or state regulations. These limits are typically health- or risk-based requirements.

2.11.1.1 Soil Chemical-Specific Requirements

During the FFS (ANG, 2017), FDEP's SCTLs were confirmed as ARARs because 1) the standards are at least as stringent or more stringent than respective federal criteria; 2) is statutorily authorized; 3) has been adopted in the FAC, Section 62-777; 4) is enforceable; and 5) is the state remedial goal for soil in Florida. Federal EPA Residential Soil Risk Based Screening Levels (RSLs) are also recognized as ARARs in accordance with the CERCLA process. Attainment of SCTLs, where feasible, is the goal of the remediation and will be utilized as cleanup criteria along with comparable EPA residential soil RSLs (USEPA. 2021). Attainment of FDEP's SCTLs or EPA residential RSLs will demonstrate achievement of the soil chemical-specific cleanup criteria. For lead, a site-specific leachability-to-groundwater SCTL was calculated utilizing the Guidance for Determining Leachability by Analysis of SPLP Results (FDEP, 2009). For select PAHs, B(a)P equivalents for residential direct contact were calculated based on the Technical Report: Development of Cleanup Target Levels for Chapter 62-777, FAC (FDEP, 2005).

2.11.1.2 Groundwater Chemical-Specific Requirements

During the FFS (ANG, 2017), FDEP's GCTLs were confirmed as ARARs because 1) the standards are at least as stringent or more stringent than respective federal criteria; 2) is statutorily authorized; 3) has been adopted in the FAC, Section 62-550; 4) is enforceable; and 5) is the state remedial goal for groundwater in Florida. Federal EPA Maximum Contaminant levels (MCLs) are also recognized as ARARs in accordance with the CERCLA process. The GCTLs will be utilized as ARARs along with comparable MCLs (USEPA, 2018). Attainment of the FDEP's GCTLs or EPA MCLs will demonstrate achievement of the groundwater chemical-specific cleanup criteria.

2.11.2 Action-Specific Requirements

Action-specific ARARs are activity- and technology-based requirements that are ARAR to one or more remedial alternative (EPA, 1998).

2.11.3 RCRA

The 1976 federal Resource Conservation and Recovery Act (RCRA) regulations governing hazardous waste management provide potential ARARs for active treatment technologies. RCRA regulations are applicable chemical-specific ARARs if waste is listed in 40 CFR 261 or exhibits RCRA characteristics; otherwise, they may be relevant and appropriate. RCRA also may impose

location- and action-specific ARARs. EPA investigation- or remediation-derived waste policy discusses options for managing materials, such as excavated contaminated soil and purge water, which may be generated during remedial activities. The potential waste materials (excavated soil and purge water) that may be generated as a result of the remedial efforts are not expected to be hazardous. The state RCRA program is detailed in FAC, Chapter 62-730.

2.11.4 OSHA

As required by the NCP (40 CFR 300.150), all site operations are governed by Occupational Safety and Health Administration (OSHA) standards of health and safety under 29 CFR 1910. Responsibility is assigned to the onsite health and safety officer for field or remedial activities to ensure that all site workers meet requirements of the health and safety plan, maintain appropriate training, possess and use all PPE, and take all precautions to eliminate exposure to unsafe or unhealthy situations. Other applicable OSHA requirements include health and safety for federal service contracts (29 CFR 1926) and recordkeeping and reporting (29 CFR 1904).

2.11.5 Ambient Water Quality Criteria

EPA has promulgated ambient water quality criteria for surface water and groundwater through 40 CFR 131. Response actions involving contaminated groundwater must be evaluated within the context of follow-on water usage and the circumstances or the actual or potential release before implementation. Federal ambient water quality criteria are relevant and appropriate, and Florida water quality criteria (FAC, Chapter 62-777) are applicable to any alternative that might have the potential to impact the quality of creeks/tributaries. The nearest surface drainage ditch is 430 ft away in a cross-gradient/up-gradient direction from UST-23 and UST-24. Given the small extent of the groundwater contamination plume, the site-specific hydrogeologic conditions, and the remedies being considered at UST-23 and UST-24, it is highly unlikely that the drainage ditch will be threatened or impacted.

2.11.6 Land Use Controls

Environmental LUCs may be utilized as ICs to protect human health and the environment by restricting exposure to contaminated soil at UST-16 and contaminated groundwater at UST-23 and UST-24. Any necessary LUCs would follow the detailed requirements in FAC, Chapter 62-780 and the latest FDEP Institutional Controls Procedures Guidance (FDEP, 2016). The LUCs would be implemented in the short term to prevent unacceptable exposure to receptors and to prohibit the installation of water wells for any use until GCTLs are attained. Once GCTLs are attained, the LUCs would be eliminated for UST-23 and UST-24.

2.11.7 Location-Specific Requirements

The impact of a contaminated site on human health and the environment is often determined by its location. Compliance with location-specific regulatory requirements prevents damage to unique or sensitive areas such as floodplains, historic places, wetlands, and fragile ecosystems and can limit remedial activities that are potentially harmful because of where they take place. Federal actions that involve potential impacts to, or take place within, sensitive areas should avoid long- and short-term adverse effects associated with modification of the area.

2.11.8 Endangered Species Act

The Endangered Species Act of 1973 (16 U.S. Code 1531 et seq. and 50 CFR 402) necessitates action be taken to protect any species listed as threatened and endangered), as well as their habitat. According to the US Fish and Wildlife Service, as of January 2016, four federally threatened species, eight endangered species, and two candidate species are reasonably expected to exist within Duval County; however, the majority of the listed species in Duval County would not be found near the FLANGB. According to the Florida Fish and Wildlife Conservation Commission, as of January 2016, there are no state-listed endangered species separate from those that are federally endangered. No habitat for the state-listed threatened species has been identified in the vicinity of the FLANGB as of January 2016 (ANG, 2017).

The Endangered Species Act of 1973 (50 CFR 17) is a potential ARAR for the site; however, there is limited quality and quantity of habitat at the three sites, and there are no complete ecological exposure pathways.

2.11.9 Federal Clean Water Act of 1972

The Federal Clean Water Act of 1972 and pursuant regulations provide potential location-specific ARARs for treatment activities. If surface water bodies are located on or downgradient of any individual site, federal, state, and/or local surface water ARARs shall apply. Cedar Creek is the nearest major drainage feature to the FLANGB. Several unnamed tributaries drain the Base and discharge to Cedar Creek. However, the nearest surface drainage ditch is more than 400 feet away in a cross-gradient/up-gradient direction from UST-23 and UST-24. Given the small extent of the groundwater contamination plume, the site-specific hydrogeologic conditions, and the remedies being considered at UST-23 and UST-24, it is highly unlikely that the drainage ditch will be threatened or impacted.

2.11.10 Utilization of Permanent Solutions and Alternative Treatment Technologies

The ANG has determined that the Selected Remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the sites. ANG has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and considering State and community acceptance.

2.11.11 Preference for Treatment as a Principal Element

The NCP establishes the expectation that treatment will be used to address the principal threats posed by a site wherever practicable (40 CFR 300.430[a][1][iii][A]). The selected remedies for UST-16, UST-23, and UST-24 are focused on treatment of principal site threats. The selected remedies satisfy the statutory preference for treatment as a principal element of the remedy.

2.11.12 Five-Year Review Requirements

At UST-16, Alternative 4, soil excavation and off-site disposal to residential criteria, would satisfy the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). Because the remedy UST-16 will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for UU/UE, a five-year review would not be required for UST-16.

At UST-23 and UST 24, Alternative 4, in-situ bioremediation would satisfy the statutory preference for treatment as a principal element of the remedy. It is anticipated that benzene and isopropyl benzene concentrations will attenuate below GCTLs in a relatively short period of time through these remedial actions. A five-year review may not be required under Alternative 4 should COCs attenuate below GCTLs prior to the five-year CERCLA statutory review date.

2.12 Documentation of Significant Changes

CERCLA §117(b) requires an explanation of significant changes from the Selected Remedy presented in the PP that was published for public comment. The PP for UST-16, UST-23, and UST-24 was released for public comment in March 2019. The PP identified Alternative 4: Excavation with Offsite Disposal to Attain Residential Land Use for UST-16, and Alternative 3: NAM and ICs for Industrial/Commercial Land Use for UST-23 and UST-24.

Subsequent to the PP, further ANG analysis of Alternative 3 (NAM and ICs) and Alternative 4 (NAM, in-situ bioremediation, and ICs) found that Alternative 4 provided a more conservative approach to attain the RAOs at UST-23 and UST-24. The selected Alternative 4 does not represent a significant change to the proposed remedy in the PP and provides for more certainty in attaining the RAOs in a shorter remedial timeframe than Alternative 3.

2.13 Responsiveness Summary

This section provides a summary of the public comments regarding the PP for remedial action at UST-16, UST-23, and UST-24. The EQD-concurred PP for UST-16, UST-23, and UST-24 was released for public comment in March 2019. The PP identified remedial Alternative 4: Excavation with Offsite Disposal to Attain Residential Land Use for UST-16, and remedial Alternative 3: NAM and ICs for residential and/or Industrial/Commercial Land Use for UST-23 and UST-24.

No written or verbal comments were received on the PP during the public comment period

2.14 References

ANG (Air National Guard). 2012. Underground Storage Tank Site Assessment Report, Facility ID Number 16852150, 125th Fighter Wing, Florida Air National Guard, Jacksonville, Florida. Final. July.

ANG. 2016. Remedial Investigation for Compliance Restoration Program for the 125th Fighter Wing of the Florida Air National Guard in Jacksonville, Florida. Florida Department of Environmental Protection, Facility ID #168521650. Final. October.

ANG. 2017. Focused Feasibility Study for Compliance Restoration Program, Florida Air National Guard, 125th Fighter Wing, Jacksonville, Florida, Florida Department of Environmental Protection, Facility ID #168521650. Final. April.

ANG. 2020. Proposed Plan for Florida Air National Guard, Jacksonville International Airport, Jacksonville, Florida, FDEP FACID #168521650 Sites: Storage Tank Site 16 (TU013) November 6, 1995 (Non-Program), Storage Tank Site 23 (TU018) October 6, 1995 (Non-Program), Storage Tank Site 24 (TU017) October 6, 1995 (Non-Program). Final. February.

EQD (Environmental Quality Division). 2017. City of Jacksonville Environmental Quality Division, Petroleum Cleanup Branch, Review Letter for Focused Feasibility Study for Compliance Restoration Program, UST 16 Area, USTs 23 and 24 Area, FDEP FACID#168521650. March.

EQD. 2019. City of Jacksonville Environmental Quality Division, Petroleum Cleanup Branch, 2019. Review Letter for Proposed Plan, UST 16 Area, USTs 23 and 24 Area, FDEP FACID#168521650. August.

FDEP (Florida Department of Environmental Protection). 2005. Development of Cleanup Target Levels. Chapter 62-777, F.A.C. Division of Waste Management. February.

FDEP. 2009. Guidance for Determining Leachability by Analysis of SPLP Results. Bureau of Waste Cleanup, Program & Technical Support Section. Tallahassee, FL. June.

FDEP. 2016. Institutional Controls Procedures Guidance. Division of Waste Management. July.

FDEP. 2019. Guidance for Comparing Background and Site Chemical Concentrations in Soil. March.

USEPA. 2018. National Primary Drinking Water Regulations. EPA 816-F-09-004.

USEPA. 2021. Regional Screening Level (RSL) Table and User's Guide Dated November 2021.

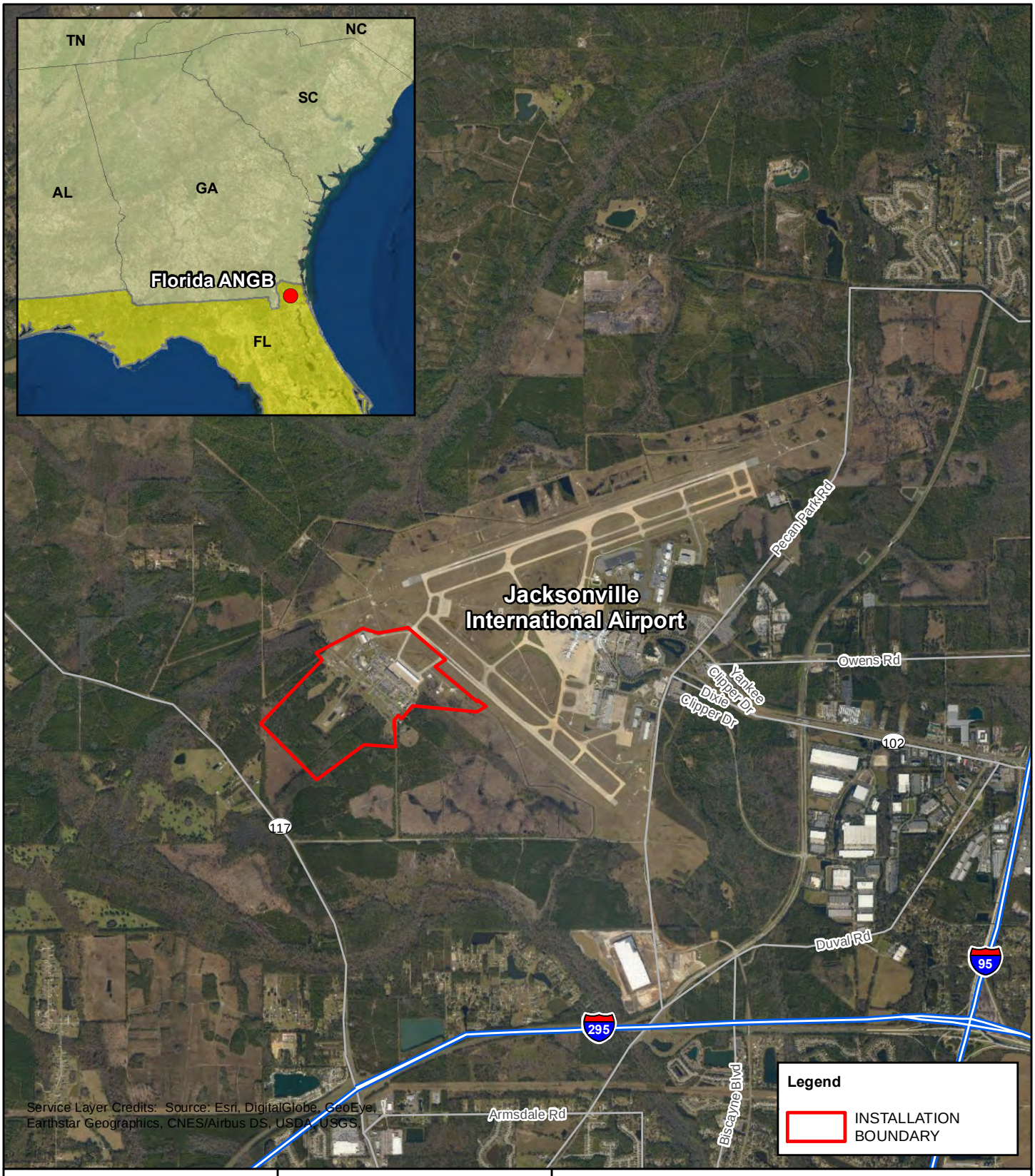
This page intentionally left blank

Attachments

This page intentionally left blank

Attachment 1 Figures

This page intentionally left blank



AECOM
3101 Wilson Blvd., Suite 900, Arlington VA
T (703) 682-4900 F (703) 682-4901

Drawn: MEB 11/9/2018

Approved: LK 11/9/2018

Project No.: 60520893

N
W E
S

Feet
0 2,000 4,000

Figure 1-1

Florida Air National Guard Base Location

FLANGB ROD
Jacksonville, Florida

H:\basket\60553852_FY17_Eastern_IRP\MXDs\Jacksonville\PARM_SRR_Report_2018_Nov\1-1_Florida_ANG_Location.mxd

Sources: ESRI

AECOM
3101 Wilson Blvd., Suite 900, Arlington VA
T (703) 682-4900 F (703) 682-4901

Drawn: AC 12/21/2017

Approved: BM 10/022018

Project No.: 60553852

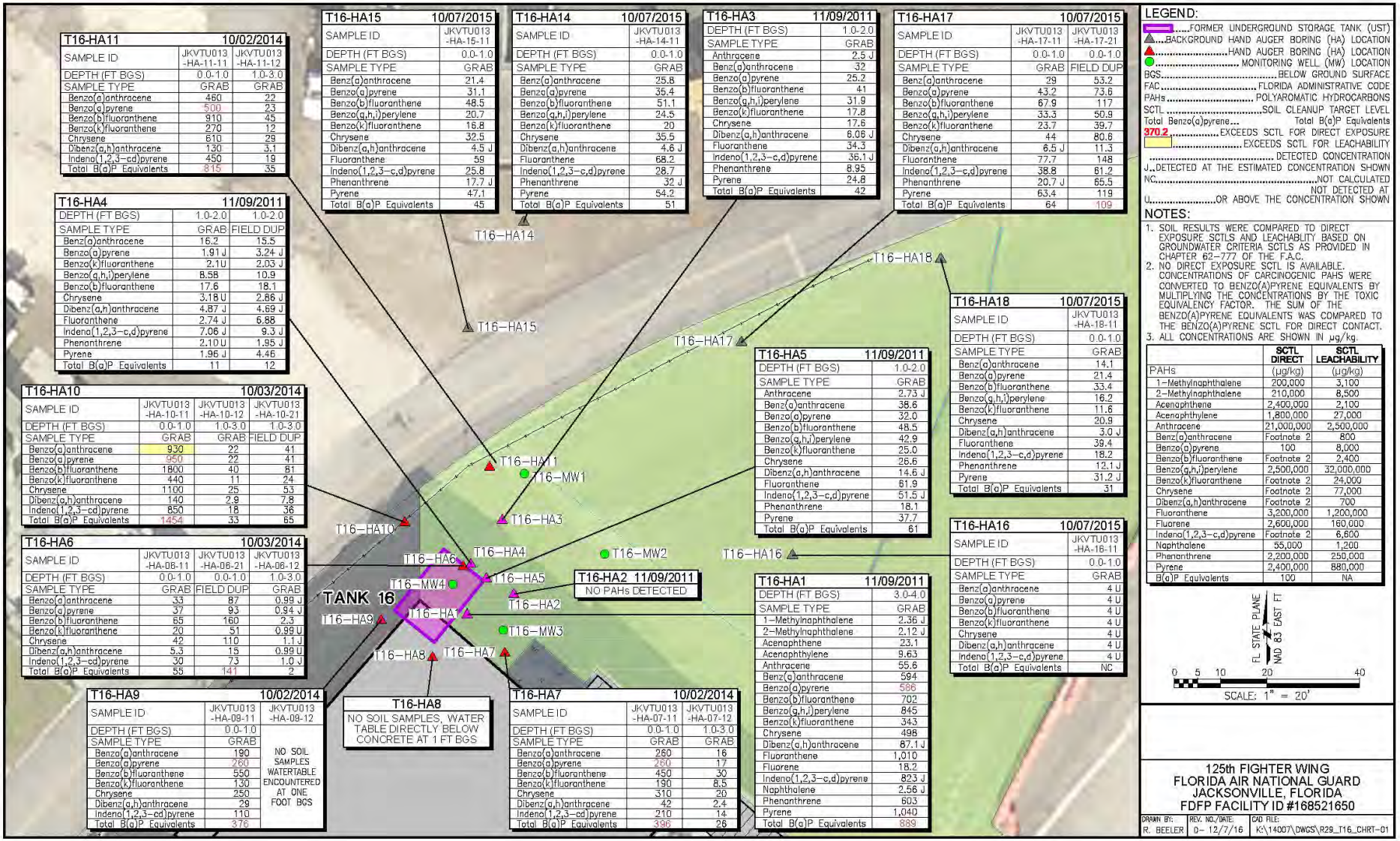
N
W E
S

Feet
0 25 50

Figure 1-2

Location Map for UST-16, UST-23, and UST-24

FLANGB ROD
Jacksonville, Florida



Source: Leidos (2017)

AECOM
3101 Wilson Blvd., Arlington, VA 22201
T (703) 682-4900 F (703) 6824901

Drawn:	AC	12/21/2017
Approved:	BM	10/02/2018
Project No.:	60553852	

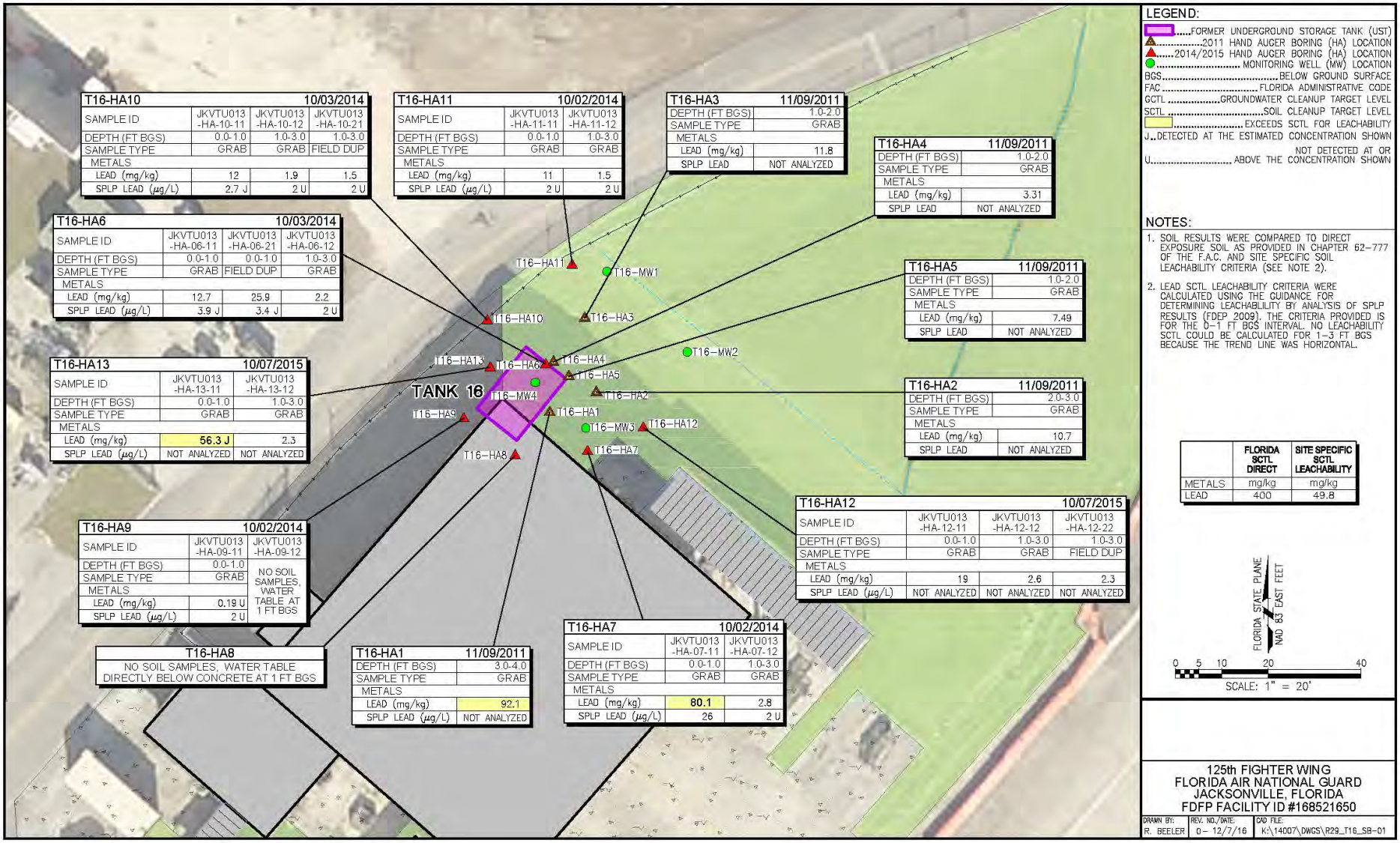
N W E S

See data frame for scale.

Figure 1-3

Soil Sample Results for PAHs at UST-16

FLANGB ROD
Jacksonville, Florida



Source: Leidos (2017)

AECOM
3101 Wilson Blvd., Arlington, VA 22201
T (703) 682-4900 F (703) 6824901

Drawn:	AC	12/21/2017
Approved:	BM	10/02/2018
Project No.:	60553852	

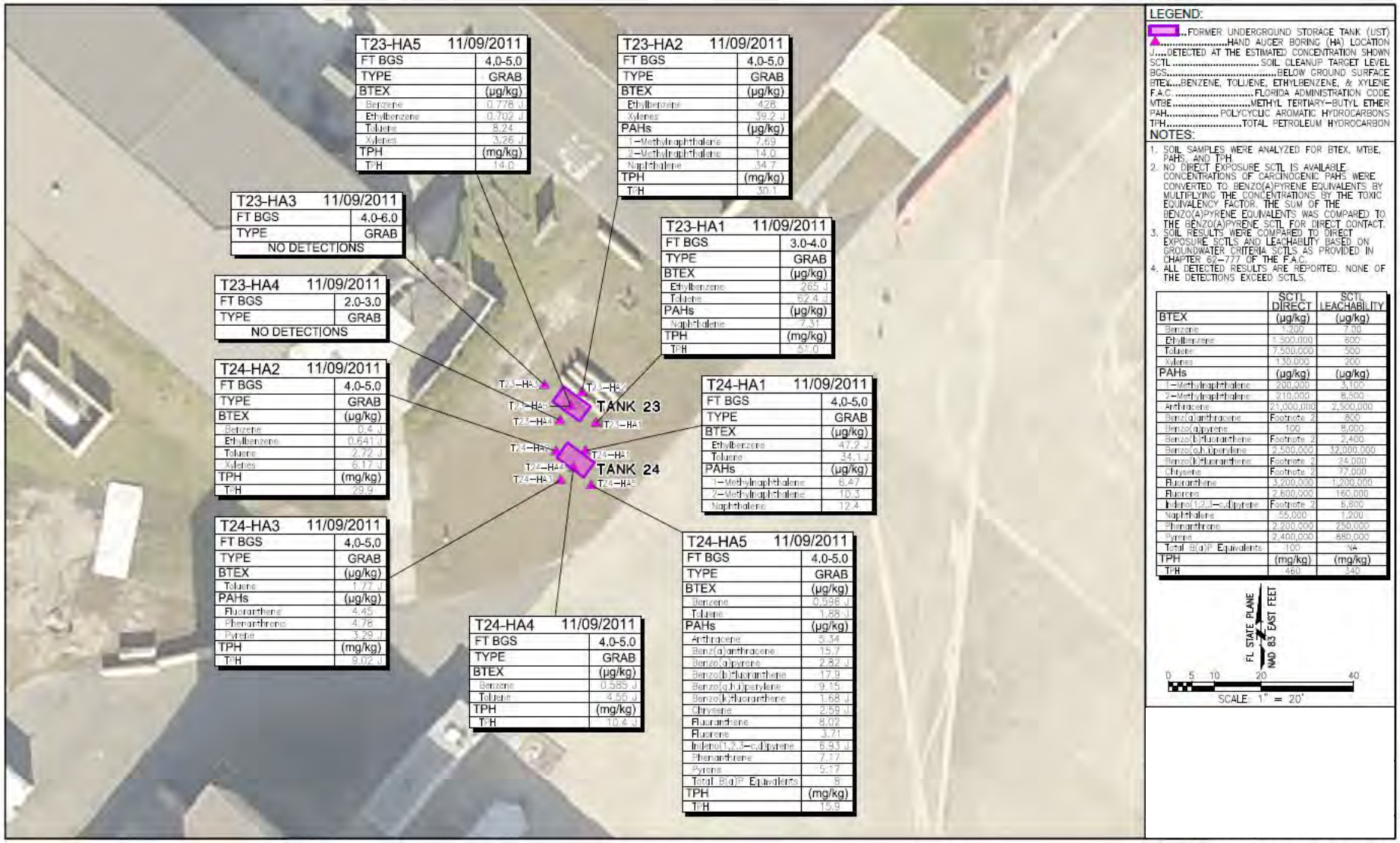
N W E S

See data frame for scale.

Figure 1-4

Soil Sample Results for Lead at UST-16

FLANGB ROD
Jacksonville, Florida



Source: Leidos (2017)

AECOM
3101 Wilson Blvd., Arlington, VA 22201
T (703) 682-4900 F (703) 6824901

Drawn:	PD	2/22/2019
Approved:	BM	2/22/2019
Project No.:	60553852	

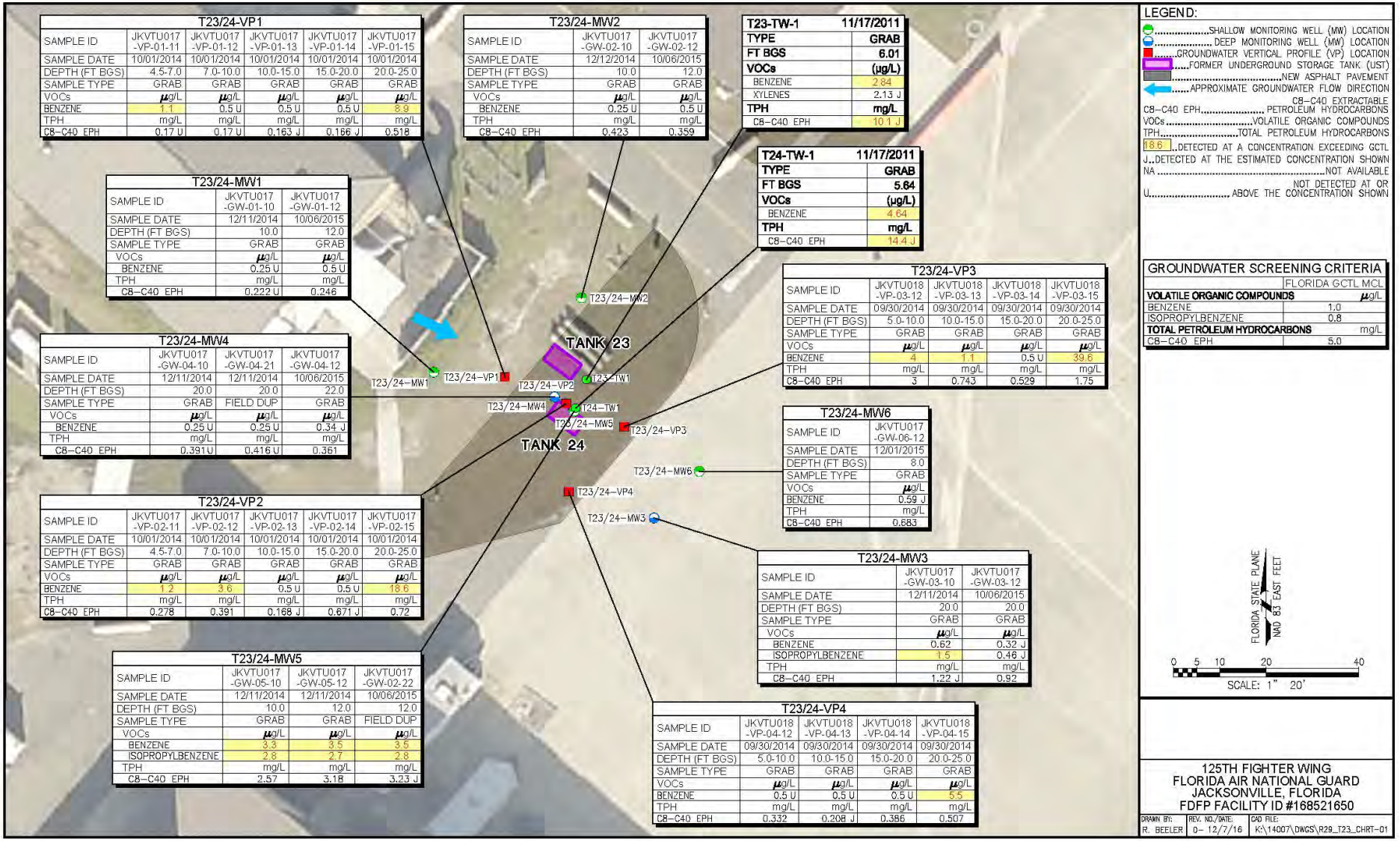
N W E S

See data frame for scale.

Figure 1-5

Detected Constituents in Soil at UST-23 (TU018) and UST-24 (TU017)

FLANGB ROD
Jacksonville, Florida



Source: Leidos (2017)

AECOM
3101 Wilson Blvd., Arlington, VA 22201
T (703) 682-4900 F (703) 6824901

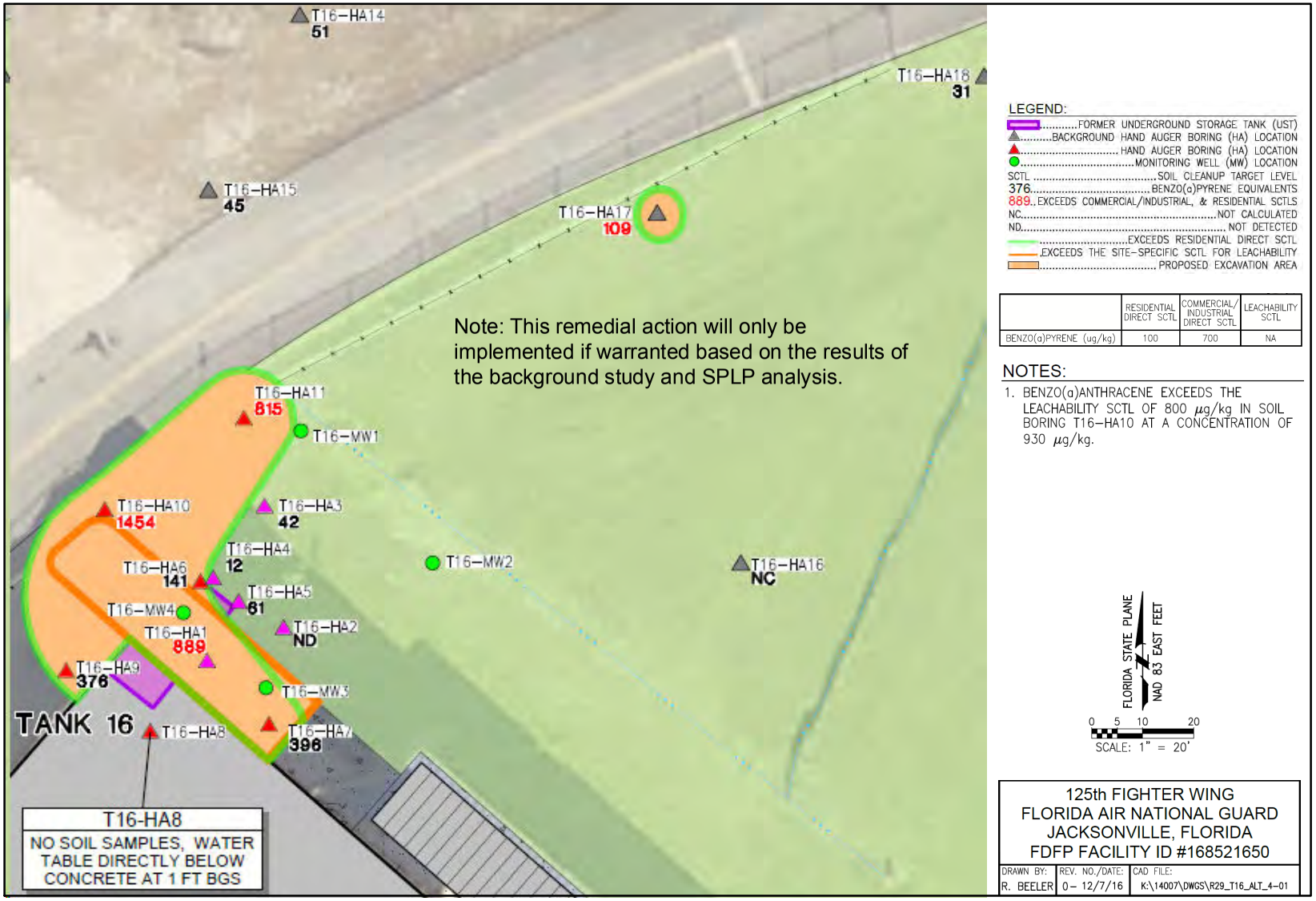
Drawn:	AC	12/21/2017
Approved:	BM	10/02/2018
Project No.:	60553852	

N W E S

See data frame for scale.

Figure 1-6
Groundwater Sample Results for VOCs and TPH at UST-23 and UST-24

FLANGB ROD
Jacksonville, Florida



Source: Leidos (2017)

AECOM
3101 Wilson Blvd., Arlington, VA 22201
T (703) 682-4900 F (703) 6824901

Drawn:	PD	10/3/2018
Approved:	BM	10/3/2018
Project No.:	60553852	

N W E S

See data frame for scale.

Figure 1-7

Extent of Soil Excavation to Attain Residential SCTLs at UST-16

FLANGB ROD
Jacksonville, Florida

This page intentionally left blank

Attachment 2 PP Public Notice

This page intentionally left blank

Job Details

Order Number:
W0198526

Schedule for ad number W01985260

Mon Mar 9, 2020 - Sun Mar 15, 2020

Florida Times-Union

All Zones

The Florida Air National Guard (FLANG) Proposed Plan (PP) identifies the preferred alternative for cleanup of contaminants at Underground Storage Tank (UST) Site 16, UST Site 23, and UST Site 24. The PP is available for public viewing on-line at: http://ar.afcec-cloud.af.mil/ and at the Highlands Branch Library located at 1826 Dunn Avenue, Jacksonville. FLANG invites the public to review and comment on the PP during a 30-day comment period (March 16 to April 14, 2020). Please mail comments to the National Guard Bureau, 3501 Fetchet Avenue-Shepperd Hall, Joint Base Andrews, MD 20762, Attn: Mr. Dickerson or email mark.dickerson@us.af.mi

Schedule for ad number W01985261

Notice to Public

The Florida Air National Guard (FLANG) Proposed Plan (PP) identifies the preferred alternative for cleanup of contaminants at Underground Storage Tank (UST) Site 16, UST Site 23, and UST Site 24. The PP is available for public viewing on-line at: http://ar.afcec-cloud.af.mil/ and at the Highlands Branch Library located at 1826 Dunn Avenue, Jacksonville. FLANG invites the public to submit comments on the PP during a 30-day comment period (March 16 to April 14, 2020). Please mail comments to the National Guard Bureau, 3501 Fetchet Avenue-Shepperd Hall, Joint Base Andrews, MD 20762 Attn: Mr. Dickerson or email mark.dickerson@us.af.mil.